

Application No. 10/073,750
Amendment dated August 4, 2004

REMARKS

Reconsideration of this application is respectfully requested.

The Examiner's comments regarding the restriction requirement are respectfully noted.

Claim 14 has been amended to obviate the Examiner's objection to the language of the Markush group employed by applicants.

The rejection of claims 14-17 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention is noted. Applicants believe the term "substantially" does not render the claim indefinite merely because that term is not specifically defined in the specification. It is submitted that this term should rather be given its usual and customary meaning to include minor variations which do not materially alter a given element or limitation found in a particular claim, in this case, the uniform dispersion of the powdered material in the coating or electrode. The Examiner's definition of the term as applied to the subject matter of claims 14-17 is, in applicants' opinion, consistent with this usual and customary meaning and,

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should it be required, applicant is willing to amend the specification to include this definition.

The rejection of claims 14 and 15 under 35 U.S.C. 102(b) as being anticipated by Yoshimura et al. cannot be maintained against the claims as now amended since these patentees fail to disclose the specific proportions of the powered coating material as now found in applicants' claims. The weight ratio of the fluoroelastomer to fluororesin in the aqueous dispersion of Yoshimura et al. is stated to be between 95:5 to 35:65 at column 5, lines 7 and 8. If one were to employ, for example, the least amount of the fluoroelastomer in the dispersion, that is, 10% by weight as stated at column 2, lines 38-40, and the highest ratio of fluoroelastomer to fluororesin, namely 95:5, then the amount of the fluororesin would have to be greater than 10% by weight and thus the total amount of the electrically conductive material employed by Yoshimura et al. would clearly be outside the range of 90 to 99% by weight as called for by applicants' claims.

As stated in *Scripps Clinic & Research Foundation vs. Genentech, Inc.* 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991):

"Invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference ... There must be no difference between the claimed invention and the reference disclosure, as viewed

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by a person of ordinary skill in the field of the invention."

Withdrawal of the rejection of applicants' claims under 35 U.S.C. 102(b) is respectfully asked.

All of applicants' claims are believed to be patentable over Koga et al. in view of Yoshimura et al., under 35 U.S.C. 103(a).

Koga et al. disclose a lithium secondary cell or battery wherein a negative or positive electrode material is formed by coating onto a current collector a composition comprising an active material and a polymer binder containing a fluorinated polymer which is curable upon exposure to radiation. As the Examiner correctly points out, Koga et al. do not teach the bonding promoters claimed by applicants.

Yoshimura et al. disclose a coating composition comprising a fluoroelastomer, a fluororesin, a coupling agent and an electrically conducting material. The coating composition may be prepared by adding the electrically conducting material to an aqueous dispersion of both the fluoroelastomer and the fluororesin, followed by agitation and application to the surface to be coated.

As stated in the specification on page 3, last paragraph, films or coatings prepared using poly(vinylidene-

fluoride) (PVDP) and poly(vinylidene-fluoride)-hexafluoropropylene (PVDF-HFP) copolymers such as disclosed by Yoshimura et al., do not adhere well to metallic surfaces and do not adhere well to themselves and thus are brittle unless large amounts of the binder (greater than about 10% by weight) are used. This is exactly what these patentees have done in preparing their coating composition. (See column 2, lines 38-40, wherein it is stated that the aqueous dispersion may contain from 10 to 70 % by weight, preferably from 30 to 60 % by weight, of the fluoroelastomer).

In the battery industry, the use of such large amounts of binder as disclosed by Yoshimura et al. is disadvantageous as it displaces the amount of electrochemically active material that can be employed in the battery, thus significantly limiting battery capacity. Yoshimura et al. are, of course, not at all concerned with making battery electrodes where, as in applicants' case, the electrochemically active material is the predominant ingredient, being present in amounts ranging from about 90 to 99% by weight of the coating. Rather, these patentees are concerned with using larger amounts of the binder to assure adhesion as well as other desirable properties. Applicants have found, on the other hand, that good adhesion of the coating can be achieved using a specific group of bonding promoters in very limited

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amounts of from about 0.001 and about 1.0 percent by weight of the coating while at the same time employing predominately powdered active material.

Moreover, it is respectively noted that Yoshimura et al. do not employ the coupling agent in their coating composition specifically to strengthen the bonding between the fluoroelastomer, conductive particles and the substrate as suggested by the Examiner. Rather, they add the coupling agent together with the fluororesin to improve the non-tackiness and lubricity of the surface of the coating. They specifically mention that these benefits are achieved without any influence on the adhesiveness to the substrate or, in other words, there is no adverse effect or improvement in adhesiveness. Thus, Yoshimura et al. state the following beginning at column 1, line 34:

"As a result of the extensive study, it has been found that the incorporation of a fluororesin together with a coupling agent into a fluoroelastomer-containing coating composition improves non-tackiness and lubricity of a surface of a coating film without any influence on its adhesiveness to the substrate ..." (Emphasis added)

Contrary to the Examiner's assertion, one of ordinary skill in the art would not be motivated to add a coupling agent from among those disclosed by Yoshimura et al. to the battery electrode compositions of Koga et al. specifically to strengthen the bonding between the fluoroelastomer and the metal particles.

Although the prior art has endeavored for years to provide a coating composition which contains predominantly a powdered coating material such as a conductive metal or electrochemically active material with only minor amounts of a binder such as a fluoroelastomer while at the same time achieving superior adhesiveness or bonding to a substrate, nobody, in spite of these developments and knowledge, has arrived at a battery electrode as set forth by applicants' claims. The Koga et al. reference itself is a typical example of how this electrode composition has eluded those skilled in the art. Moreover, while Yoshimura et al. referred to the use of coupling agents in coatings containing conductive particles and a fluoroelastomer binder, they nowhere mention or suggest coatings which advantageously contain conductive particles in such large amounts of between 90 and 99 percent by weight of the coating.

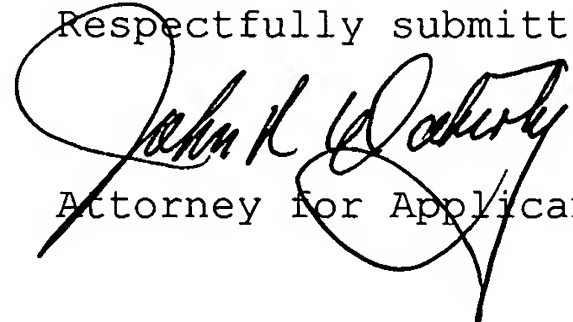
If, as the Examiner claims, one skilled in the art would have been motivated to employ one of the coupling agents disclosed by Yoshimura et al. in the battery electrode of Koga et al., it certainly should have been obvious to Koga et al. who are skilled artisans and who must have known of Yoshimura et al. whose patent issued more than twelve years beforehand. However, it was not until applicants discovered the improvement made possible by the present invention that anyone realized the

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significance of what admittedly might be viewed as a simple modification or extension of what was already known in the art, but one which is clearly not obvious from the prior art.

For the above reasons, an action allowing the claims and passing this case onto issue is earnestly requested.

Respectfully submitted,



Attorney for Applicants

John R. Doherty
P.O. Box 706
Stevenson, CT 06491-706
Phone: 203-459-8701

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